Incentives in an international bank

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Abstract

Margins in international banking have fallen dramatically during the last years. Therefore, banks face the pressing need to develop more suitable forms of organization and more efficient incentive schemes. In a principal agent framework this paper develops four fundamental rules. The marginal benefits from additional risk taking should be equal to its marginal cost. The top management should set position limits to the local branch managers. Competition across local branches should be used to improve incentives. If the local branch manager can engage in different activities, incentives should be balanced. © 2000 Elsevier Science B.V. All rights reserved.

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A revolution started in banking in 1983 when Lloyds TSB announced that it would start focusing on shareholder value. Part of that strategy was to introduce performance-related pay for the top management\(^1\). Since then banks around the world have started to implement similar strategies. A central challenge for the success of an international bank is to set the incentives for the local branch managers in order to induce them to make decisions that are in line with the overall objectives of the bank. In implementing shareholder value the top management of

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\(^1\) Pitman (1998), p. 98
an international bank faces two problems. After determining the desired trade-off between risk and return that maximizes shareholder value, the top management has to induce the local branch management to take the desired amount of risk. In addition, the top management has to enforce scrutiny and effort of the local branch managers. In a stylized setting this paper develops some fundamental rules for optimal incentive schemes in an international bank. These rules concern decentralized risk taking in a bank, the role of limits, competition across local branches, and balanced incentives if the local branch manager faces different fields of activity.

In an international bank asset allocation decisions to a large extent have to be pursued at a local level. This is due mainly to an informational advantage. Local branch managers will have a more precise knowledge of local market conditions. As a consequence, the local branch manager needs rules according to which he can make decisions. Usually these decision rules will encompass two components. First, they will determine the required trade-off between risk and return. The headquarters have to define a minimum return that has to be earned on any additional risk. One of the main challenges is to determine this additional risk. Second, top management has to make sure that the bank does not become vulnerable to excessive risk taking by local branch managers. Therefore, it will introduce a limit system in which a local branch is only allowed to take up to a maximum amount of risk.

In addition, the top management has to ensure effort and scrutiny of the local branch management. The local branch management can engage in value enhancing activities, which the top management can only control imperfectly. The local branch manager has two decisions to make: he has to determine his effort level and he has to decide how much risk to take. In a stylized way one can think of the decision at the local branch level as a two-stage process. First, the management determines which effort to spend. This effort level determines the available investment technology. For a given investment technology the local management then decides which risks to take. This determines the expected rate of return.

In this setting a couple of interesting questions for the organization of a bank arise. A first question is whether the top management can use internal competition to improve the incentives. If managers work in similar branches the bank might be able to infer something about the relative performance. A second question is how the optimal incentives should be set if a branch manager can spend her effort in two sets of activities, one where no risk occurs and one with substantial idiosyncratic risk. An example for the first activity is a well-diversified portfolio where the realized losses are equal to the expected losses. For the second activity the branch manager is supposed to enter a new market where she has to bear significant idiosyncratic risk. Although perfect incentives could be provided for the first activity, in an optimal contract incentives are diluted. Otherwise it would be difficult to motivate the branch manager to engage in the second activity.

This paper investigates the consequences of shareholder value maximization in an agency theoretic framework. It develops a framework at the intersection of two strands in the recent literature. First, it relates to the recent discussion of shareholder value maximization within banks. Second, it adopts an agency theoretic framework to derive rules for decentralized decision making.
The objective of shareholder value maximization has forced banks to develop appropriate tools in order to implement this objective. RAROC, a concept introduced by Bankers Trust, defines hurdle rates of return which have to be achieved by the business units on their allocated capital. As a performance measure Stern Stewart & Co. have introduced the concept of EVA, the economic value added. EVA is a measure of the increase in shareholder value after the cost of capital has been subtracted. The key idea of both RAROC and EVA in determining the profitability of an activity is to account for the riskiness of this activity.

Matten (1996) and Zaik et al. (1996) discuss the implementation of RAROC and EVA for risk management and performance evaluation. Implementing RAROC as a performance measure suffers from the following problem. If the aim of a business unit is to maximize its returns this may lead to under-investment as the business unit may forego investment opportunities which increase shareholder value. Therefore, my model uses EVA as a performance measure.

This paper investigates the consequences of shareholder value maximization in an agency theoretic framework. The second strand in the literature to which I refer is the literature on agency problems. Decentralized decision making in financial institutions faces the problem of how to account for the interaction of risk taking decisions. For the capital budgeting decision, this question has been addressed by Harris and Raviv (1996, 1998). Most closely related to my approach is work by Stoughton and Zechner (1999a,b). They discuss problems of capital allocation in a bank within an agency theoretic framework. Within this framework Stoughton and Zechner (1999a) show that EVA can be used as a performance measure. In addition, they can show that in a framework that relies on full information the incremental value at risk can account for the interaction of decentralized risk taking decisions (p.18). Building on earlier work by Holmström and Ricart i Costa (1986), Stoughton and Zechner (1999b) investigate capital allocation in a bank in a two period framework. From results during the first period the top management learns about the quality of the local branch management. This additional learning causes an externality that induces overspending of capital as compared to the first best case. The authors interpret their finding as a rationale for introducing a limit system. Contrary to Stoughton and Zechner, in my modelling framework, local managers bear part of the portfolio risk from their risk taking decision. I discuss the influence which risk aversion has on the risk taking decision.

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2 The implementation of RAROC at Bank of America is discussed by Zaik et al. (1996).
3 EVA is a registered trademark of Stern Stewart & Co. An in depth treatment is provided by Stewart (1998). The relationship between EVA and market value is discussed by O’Byrne (1996). The application of EVA in banks is discussed by Uyemura et al. (1996).
4 Although Zaik et al. (1996) do not refer to the concept of EVA explicitly, they refer to the economic profit as a performance measure, a concept which is closely related to EVA. Both economic profit and EVA use earnings less a charge for the cost of capital as a starting point to proxy for increases in shareholder value. EVA adjusts reported earnings to obtain a measure of profitability which is economically more meaningful. For a detailed discussion of these adjustments see O’Hanlon and Peasnell (1998).
In the last part of the paper I apply a framework which is due to Holmström and Milgrom. Holmström and Milgrom (1990) discuss problems which arise in a multi-agent setting. Holmström and Milgrom (1991) derive optimal incentive schemes if the agent has different activities among which he can choose. I apply their framework to problems that arise in an international bank.

Four rules for incentives in an international bank follow from my analysis. First, incentives should ensure that the marginal benefits from additional risk taking should be equal to its marginal costs. Second, in order to avoid excessive risk taking, the top management should set limits to the local branches. Third, the top management should induce competition between local branch managers. This competition reveals information which can be used for a relative performance evaluation and lowers agency costs. Fourth, if local branch managers can engage in different investment activities, the top management has to balance incentives. This holds in particular if the branch management should engage in new investment activities with a lot of idiosyncratic risk.

This paper is organized as follows. The objective function of an international bank must be to maximize shareholder value. This is the starting point of my analysis. In a stylized setting I separate two decisions of the local branch manager. First, the decision how much risk to take. I discuss problems that arise from decentralized risk-taking in a multi branch bank. Second, the decision how much effort to spend in the job. I investigate how the top management can induce the local branch manager to invest the desirable amount of effort. A summary concludes.

1. Maximizing shareholder value

In a market economy the ultimate objective of any company is to create shareholder value. A company creates shareholder value if its profits exceed the cost of equity. This increase in shareholder value is known as EVA, the economic value added. The expected EVA can be written as

\[ E(\text{EVA}) = \mu - rC \]  

where \( \mu \) is the expected cash flow for the shareholders at the end of the investment period, \( r \) is the cost of equity, and \( C \) is the equity of the bank.

In a bank the available equity \( C \) limits the capacity of a bank to take risks. This limiting function of equity has two reasons: regulation and market forces. Prudential regulation of banks requires that banks have equity available that is proportional to the riskiness of the assets that they hold. For the loan portfolio of the bank these amounts are standardized according to the quality of the borrower. For market risks the capital requirements can be expressed in terms of a value at risk (VaR) restriction. The value at risk is the loss that is not exceeded with a given probability during a given period of time. In the case of a normal distribution this can be expressed as a function of the standard deviation, \( \sigma \). In this case the capital requirement can be expressed as
The factor $\omega$ is determined by the probability of the loss. E.g. the regulatory standard of the Basel accord is 99% for a time horizon of 10 days (Basel Committee on Banking Supervision, 1996).

In addition, clients and the market may force a bank to restrict its risk taking activities. If the bank’s risks are large as compared to its equity the danger of insolvency increases. Clients may no longer be willing to give deposits to the bank nor trade with it as they fear to lose their money. This may also give rise to a value at risk constraint.

Shareholders are only willing to invest into a bank if they obtain a return on their investment. This determines the cost of equity $r$. It can be obtained from asset pricing models as the CAPM or by comparison with benchmark companies. As a benchmark for good practice one can take the 18% which Lloyds TSB used as their cost of equity.

The expected cash flow, $\mu$, depends upon the portfolio of investments of the bank. The risk of the portfolio and the effort of the local branch management determine the profitability of this portfolio.

In the following I discuss two aspects of decentralized decision making within an international bank. First, I turn to the question how the top management can induce the desired effort level of the local branch management. Second, I look at the risk taking decision. After the top management has determined the desired amount of risk for the entire bank, it has to set incentives such that the decisions of the local branch management result in the desired risky portfolio for the entire bank.

2. Decentralizing the risk taking decision

The first major question for the top management is how to decentralize the risk taking decision. The top management of an international bank faces the problem of choosing the amount of risk, $\sigma$, which maximizes the expected EVA. If the constraint Eq. (2) is binding this implies the following objective function for the top management

$$\max_{\sigma} \mu(\sigma) - r \omega \sigma$$

The optimality condition shows the optimal relation between risk and return. The marginal benefit from an additional risk should be equal to its marginal cost.

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One of the main questions for an international bank is how to break down total shareholder value to ensure the right incentives for the local decision-makers. One simple rule for decentralized decision making is congruence: the objectives of the agent have to be in line with the objectives of the principal. To ensure that the agent pursues the objectives of the principal, the agent has to be paid according to these objectives. If the top management maximizes EVA, the local branch management should do the same. Therefore, the local branch management should be paid according to the EVA that they create.

In the following I discuss how a manager reacts to an incentive contract which is linear in EVA. Before turning to the case of an international bank which is organized in multiple divisions, I discuss the case of a single branch bank as a benchmark.

2.1. The single branch case

An incentive function that is linear in the realized EVA can be stated as follows

\[ a_0 + a_1 \text{EVA} = a_0 + a_1 (\mu(\sigma) - r_\lambda \sigma + \varepsilon) \]  

(\varepsilon is an error term with \( E(\varepsilon) = 0 \).) To be able to derive analytic results I assume that the local branch manager maximizes an exponential utility function and the error term is normally distributed with a standard deviation of \( \sigma \). Then I can write the certainty equivalent in an explicit form. The local branch manager maximizes

\[ \max_{\sigma} a_0 + a_1 (\mu(\sigma) - r_\lambda \sigma + \varepsilon) - 0.5 r_\lambda a_1^2 \sigma^2 \]  

(\( r_\lambda \) is again the coefficient of absolute risk aversion. For the local branch manager the optimal trade off between risk and return requires an additional risk premium, 0.5\( r_\lambda a_1^2 \sigma^2 \). The first order condition is

\[ \mu(\sigma) - r_\lambda \sigma = 0 \]  

The first best value from Eq. (4) will be achieved if the branch manager is risk-neutral (\( r_\lambda = 0 \)). If \( r_\lambda > 0 \) the local branch manager will set \( \sigma \) below the first best value. As the marginal risk premium is positive, he will set \( \sigma \) below the first best value.

A way to induce the branch manager to take more risks is to make his payment convex in \( \sigma \). If the branch manager participates more in positive developments than he is punished for negative developments, he has an incentive to speculate which will lead him to increase \( \sigma \). In practice, incentive contracts are bounded usually from below, as managers do not have to pay if the rate of return falls short of the hurdle rate. Instead their bonus will be set equal to zero.

2.2. Systematic and nonsystematic risk

An interesting consequence of the incentive scheme Eq. (5) arises if we decompose the risk, \( \sigma \), into a systematic component (\( \sigma_S \)) and an unsystematic component (\( \sigma_U \)). The systematic risk increases the expected cash flow, whereas the unsystematic
Risk does not influence the expected cash flow. \( \sigma_S \) and \( \sigma_U \) are assumed to be uncorrelated. If the branch manager can control for both components then

\[
\frac{\partial \mu}{\partial \sigma_S} = r_\omega \frac{\partial \sigma}{\partial \sigma_S} + r \lambda \sigma \frac{\partial \sigma}{\partial \sigma_S} \tag{8}
\]

\[
0 = \frac{\partial \mu}{\partial \sigma_U} = r_\omega \frac{\partial \sigma}{\partial \sigma_U} + r \lambda \sigma \frac{\partial \sigma}{\partial \sigma_U} \tag{9}
\]

For the systematic component one obtains the same solution as above (cf. Eq. (7)). For the unsystematic component the local branch manager has two incentives to reduce it. First, to the extent that he has to bear the cost of capital of the additional risk, he will want to reduce that risk. The second incentive is that he wants to reduce his personal cost of risk bearing.

2.3. The multi branch case

International banks are multidivisional organizations. This complicates the analysis, as the top management has to take into account the interaction between the branches of the bank. The idea of the optimality condition Eq. (4) has to be maintained. In the optimum the marginal benefit of any additional unit of risk has to be the same as its additional cost. However, in the case of a multi branch bank it becomes more complicated to determine the incremental risk of the local branches. In a single division bank the local branch management has to pay the cost of equity for any additional value at risk, \( \sigma D v \). This additional value at risk can be determined on a stand-alone basis. This is different in the case of decentralized decision making. Here, the value at risk also depends upon the risk taking activities of the other branches. The headquarters can try to solve this problem in a top down process in two steps. First, they determine a desired benchmark portfolio and its risk, \( \sigma^* \), for which \( \mu = r_\omega \). This portfolio can only be determined up to an approximation as the top management decides under incomplete information: they lack the local expertise of the branch managers. This optimal portfolio already implies the optimal risk that the branches have to take. In the case of a two branch bank, \( \sigma^{*2} = \sigma_1^{*2} + \sigma_2^{*2} + \rho \sigma_1^* \sigma_2^* \), where \( \rho \) is the correlation between the branches which in the following is assumed to be fixed. In a second step the headquarters implement an incentive scheme which induces the desired risk taking behaviour of the local branches.

Starting from an incentive scheme which is linear in EVA this implies the following first order condition

\[
\frac{\partial}{\partial \sigma_1} (\mu + \sigma_1 (\mu (\sigma_1) - r_\omega \sigma (\sigma_1))) - 0.5 r \lambda \sigma_1^2 = 0 \Leftrightarrow \tag{10}
\]

\[
\frac{\partial \mu}{\partial \sigma_1} = r_\omega \frac{\partial \sigma}{\partial \sigma_1} + r \lambda \sigma_1 \frac{\partial \sigma}{\partial \sigma_1} \tag{11}
\]

The marginal risk is
\[
\frac{\partial \sigma^*}{\partial \sigma_1} = \frac{\sigma_1^* + \rho \sigma_2^*}{\sigma^*}
\] (12)

If the risk contribution of the branch manager is small as compared to the entire portfolio of the bank this expression simplifies to

\[
\frac{\partial \sigma^*}{\partial \sigma_1} = \rho
\] (13)

where \(\rho\) is the correlation of the risk of the individual branch with the bank’s entire portfolio. Contrary to the single branch case, in both cases (12) and (13), the incremental risk depends on the risk taking decisions of the other branches.

2.4. Position limits

In an organization where the risk taking decision is decentralized the problem arises how to control for the risks of the entire organization. The top management of an international bank will always want to control for its total risk exposure. The top management can only approximate the risks that are taken at the local level. Problems arise if the local branch managers behave differently than expected. E.g. assume that a local branch manager is risk loving, \(r_{\lambda} < 0\). This implies that he will take more risks than desired. A system of position limits can avoid this problem as the branch manager is restricted by a maximum amount of risk that he can take.

2.5. Results

From this part of my analysis I obtain the following results. An international bank that maximizes shareholder value should pay a local branch manager according to the EVA that he creates. In a linear incentive contract risk aversion biases the decision of the local branch manager downward to take less risk than what is desired by the top management. In a multi branch bank the incentive scheme has also to account for the correlation of activities across branches. Position limits can be used to limit the overall risk exposure of a bank.

3. Incentives for managerial effort

In the third part of my analysis I turn to the problem that the top management cannot control for the effort level of the local management. The analysis will be pursued in a stylized setting. I will restrict my attention to the case that the effort levels only influence the expected cash flow of the branch portfolio. This will help to derive some stylized results for optimal incentive schemes in a decentralized organization\(^6\).

\(^6\) Of course, the effort level will not only influence the expected cash flow, but also the riskiness of the portfolio. A low effort level may increase the unsystematic risk of the portfolio. Moreover, in the following I neglect interactions between the risk taking and the effort decision.
For an increased effort level \( \theta \) the local branch manager has to incur a personal cost for which he has to be compensated. His personal cost function is increasing and convex in \( \theta \), \( C' > 0 \) and \( C'' > 0 \). In this stylized setting the top management is still interested in the maximization of EVA. Nevertheless, the incentive scheme will be made dependent on the cash flow from the investment portfolio alone as the choice of the effort level is supposed not to influence the riskiness of the investment. A linear reward function for the local branch management is \( b_0 + b_1(\mu(\theta) + \epsilon) \). The shareholders and the top management are assumed to be risk-neutral. They maximize the expected EVA.

As a starting point I take again the case of a single branch bank. The entire optimization problem can be stated as

\[
\begin{align*}
\max_{b_0, b_1} & \quad (1 - b_1)\mu(\theta*) - r\sigma - b_0 \\
\text{s.t.} & \quad \theta* = \arg \max E(U(b_0 + b_1(\mu(\theta) + \epsilon) - C(\theta))) \\
& \quad E(U(\theta*)) \geq U
\end{align*}
\]

The top management maximizes the expected value by setting the optimal incentive scheme \((b_0, b_1)\). \( r\sigma \) is the cost of equity. The \( \sigma \) is the result of the optimal risk taking decision which has been determined in the previous section. The local branch management maximizes its expected utility by setting \( \theta \) to its optimal value (incentive compatibility constraint). The last inequality ensures the participation of the branch manager (participation constraint).

To obtain analytic results I assume that the branch managers maximize exponential utility and the error term \( \epsilon \) is distributed normally. The maximization problem can be reduced to the maximization of the sum of the certainty equivalents, which in this case can be stated in explicit functional form. From the point of view of the top management the optimization problem can be stated as follows.

\[
\begin{align*}
\max_{b_0, b_1} & \quad \mu(\theta) - r\sigma - C(\theta) - 0.5r_A b_1^2 \sigma^2 \\
\text{s.t.} & \quad b_1 \mu_\theta - C' = 0 \\
& \quad E(U(\theta*)) \geq U
\end{align*}
\]

\( r_A \) is again the coefficient of absolute risk aversion. \( b_1 \) is set so that it maximizes the sum of the certainty equivalents. The first constraint is the first order condition from the incentive compatibility constraint. \( b_0 \) is always chosen such that the participation constraint \( E(U(\theta*)) \geq U \) holds with equality. Solving this problem I obtain the following optimality conditions

\[
\begin{align*}
\mu_0 - C' = b_1 r_A \sigma^2 \frac{C'' \mu_0 - C' \mu_{00}}{\mu_{00}^2} \\
b_1 \mu_\theta = C'
\end{align*}
\]

If the agent shows no risk aversion \((r_A = 0)\) then the optimal \( b_1 \) is set equal to one. This is the first best situation, as no additional cost of risk bearing has to be incurred. The marginal cost \( C' \) is equal to the marginal benefit of more effort. If the
agent shows positive risk aversion then the first equation shows in which way the optimal solution deviates from the first best solution. As $\mu_0 < 0$ and $C'' > 0$ the incentive coefficient will be set below the marginal benefit from taking more effort by an amount which depends on the risk aversion $r_A$, the degree of noise, $\sigma^2$, and the marginal trade off between the marginal cost $C'$ and the marginal productivity, $db_1(\mu_0)/d\theta$.

Starting from the equation system Eqs. (20) and (21) as a benchmark case I discuss how the optimal incentive scheme has to be modified in two situations. If the bank is able to obtain additional information from comparing the performance with other branches it can improve the incentive scheme and lower the agency costs. In the second case the branch management can engage in two fields of activities, a risky one and a safe one. The incentive system has to account for interactions between these activities.

3.1. Relative performance evaluation

Assume that an international bank has two branches A and B. The top management can observe the realized cash flow of the two branches, $\mu_A(\theta_A) + \varepsilon_A$ and $\mu_B(\theta_B) + \varepsilon_B$ where the two error terms are correlated with $\rho$. It is assumed that the local branch managers cannot communicate. The reward function for the branch manager of branch A is $b_{0,A} + b_{1,A}(\mu_A + \varepsilon_A) + b_{2,A}(\mu_B + \varepsilon_B)$. The optimization problem can then be stated as

$$\max_{b_{0,A}} \mu(\theta_A) + \mu(\theta_B) - r\rho\sigma - C_A(\theta_A) - C_B(\theta_B)$$

$$- (0.5 \sigma_A (b_{1,A}^2 + b_{2,A}^2) + 2 \rho b_{1,A} b_{2,A} \sigma_A \sigma_B)$$

$$- (0.5 \sigma_B (b_{1,B}^2 + b_{2,B}^2) + 2 \rho b_{1,B} b_{2,B} \sigma_A \sigma_B)$$

$$\text{s.t.} \quad b_{1,A} \mu_A - C_A' = 0$$

$$\text{s.t.} \quad b_{2,A} \mu_B - C_B' = 0$$

The optimality conditions for the incentives of the local branch A are

$$\mu_0 - C_A' = b_{1,A} r_A \sigma_A (1 - \rho^2) \frac{C_A'' \mu_0 \sigma_A - C_A' \mu \theta}{\mu_0^2}$$

$$b_{1,A} \mu_0 = C_A'$$

$$b_{2,A} = - b_{1,A} \rho \frac{\sigma_A}{\sigma_B}$$

In comparison with the benchmark case Eqs. (20) and (21) the deviation from the first best situation is smaller. The factor $(1 - \rho^2)$ indicates how the top management can lower the agency costs by relative performance evaluation. In the extreme case of $|\rho| = 1$ the first best can be achieved as the action of the branch manager can be inferred exactly. The first order condition Eq. (26) remains the same as in the benchmark case. The additional condition Eq. (27) sets the parameter $b_{2,A}$ such that the exposure with respect to the second risk, $\varepsilon_B$, is minimized.
3.2. Balanced incentives

The second modification of the benchmark situation is that the local branch management can engage in different activities. Assume that a country manager has already a loan portfolio under her surveillance that is well diversified. The realized EVA is always equal to the expected EVA. This implies that her performance can be measured perfectly. In the benchmark case $b_1$ is set equal to one, as she has to bear no risk. In addition to this first activity, $\theta_1$, the top management now wants to induce the local branch manager to pursue a second activity, $\theta_2$, which has a lot of idiosyncratic risk, e.g. venture capital financing. Although it would still be possible to provide perfect incentives for the first activity, this does not turn out to be optimal any longer. The reason is that perfect incentives for the first activity would draw the attention of the local branch manager away from the second activity.

For the extreme case $\sigma_1 = 0$ the optimization problem can be stated as follows:

\[
\begin{align*}
\max_{b_1, b_2} & \quad \mu(\theta_1) + \mu(\theta_2) - \rho \sigma - C(\theta_1, \theta_2) - 0.5r_A b_2 \sigma_2^2 \\
\text{s.t.} & \quad b_1 \mu_{\theta_1} - C_1 = 0 \\
\text{s.t.} & \quad b_2 \mu_{\theta_2} - C_2 = 0 
\end{align*}
\]

The optimality conditions are

\[
\begin{align*}
b_1 \mu_{\theta_1} &= C_1 \\
b_2 \mu_{\theta_2} &= C_2 \\
\mu_{\theta_2} - C_2 &= b_2 r_A \sigma_2^2 \frac{C_{22} \mu_{\theta_2} - C_2 \mu_{\theta_2} \sigma_2}{\mu_{\theta_2}} \\
\mu_{\theta_1} - C_1 &= b_2 r_A \sigma_2^2 \frac{C_{21}}{\mu_{\theta_1}} 
\end{align*}
\]

The first three optimality conditions are equivalent to the benchmark case. The last equation shows in which way the incentive for the first activity deviates from the first best case in which $\mu_{\theta_1} - C_1 = 0$. If the two activities are substitutes, $C''_{21} > 0$, $\theta_1$ will be set below the first best activity level.

3.3. Results

From this part of my analysis the following two rules can be inferred. First, the top management of an international bank should use relative performance evaluation to induce higher effort levels of the local branch management. Second, if the local branch management can engage in different activities it can be useful to lower the incentives for an established activity in order to make it attractive for the local branch management to engage in a new activity where it has to bear a lot of idiosyncratic risk.
4. Summary

This paper analyzes incentives in an international bank in a stylized setting. It applies a principal agent framework to the problem of decentralized decision making in a multi branch organization.

The results from my analysis can be summarized in four rules for optimal incentives in an international bank. First, incentives should ensure that the marginal benefits from additional risk taking should be equal to its marginal costs. Second, in order to avoid excessive risk taking the top management should set limits to the local branches. Third, the top management should induce competition between local branch managers. This competition reveals information which can be used for a relative performance evaluation and lowers agency costs. Fourth, if local branch managers can engage in different investment activities the top management has to balance incentives. This holds in particular if the branch management should engage in new investment activities with a lot of idiosyncratic risk.

Theory and practice face the challenge to develop more elaborate incentive schemes along these lines. Competition in international banking will force banks to implement these improved incentive schemes. Their shareholders will applaud.

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